

PRELIMINARY AMENDMENTS

In the Claims:

1. (Currently Amended) A method for manufacturing a PIN diode, comprising the following steps:

forming a p-area on a first surface of a substratewafer;

forming an n-area on the first surface of the substrate-wafer spaced apart from the p-area;

forming an intermediate area on the first surface of the substrate-wafer between the p-area and the n-area, wherein a doping concentration of the intermediate area is lower than a doping concentration of the p-area and lower than a doping concentration of the n-area;

forming a first electrically conductive member on a side of the p-area, which faces away from the intermediate area; and

forming a second electrically conductive member on a side of the n-area, which faces away from the intermediate area.

2. (Currently Amended) The method in accordance with claim 1, comprising the following steps:

providing the substrate-wafer and a device substratewafer; and

wafer-bonding of the substrate-wafer and the device substratewafer, wherein the p-area, the n-area and the intermediate area are formed in the device substrate-wafer and insulated against the substratewafer.

3. (Currently Amended) The method in accordance with claim 2, comprising the following steps:

forming a trench in a section of the device substratewafer, which abuts on the intermediate area, wherein the trench extends from a surface of the device substratewafer, which faces away from the substratewafer, to a surface of the device substratewafer, which is opposite to the substratewafer; and

filling the trench with an insulating material.

4. (Currently Amended) The method in accordance with claim 3, wherein the trench is further formed in sections of the device substratewafer, which abut on the p-area and on the n-area.

5. (Currently Amended) The method in accordance with claim 2, wherein the p-area or the n-area, respectively, is formed by

forming a trench in the device substratewafer and filling the same with p-doped or n-doped polysilicon, respectively, or by

implanting of p-material or n-material, respectively, in predetermined areas of the device substratewafer, or by

forming a trench in the device substratewafer, introducing of p-material or n-material, respectively, into the same and diffusing of the introduced material into the areas of the device substratewafer surrounding the trench.

6. (Currently Amended) The method in accordance with claim 1, further comprising the following step:

forming an insulating layer above the surface of the p-area, the n-area, and the intermediate area, which faces away from the first surface of the substratewafer.

7. (Currently Amended) The method in accordance with claim 1, further comprising the following step:

forming of pads on the surfaces of the p-area and the n-area, which face away from the first surface of the substratewafer.

8. (Currently Amended) A PIN diode comprising:

a p-area on a first surface of a substratewafer;

an n-area on the first surface of the substratewafer;

an intermediate area on the first surface of the substratewafer between the p-area and the n-area, wherein a doping concentration of the intermediate area is lower than a doping concentration of the p-area and lower than a doping concentration of the n-area;

a first electrically conductive member, which is arranged on a side of the p-area, which faces away from an intermediate area; and

a second electrically conductive member, which is arranged on a side of the n-area, which faces away from the intermediate area.

9. (Currently Amended) The PIN diode in accordance with claim 8, having an insulating layer on the substratewafer and a device substratewafer on the insulating layer, wherein the p-area, the n-area, and the intermediate area are arranged in the device substratewafer.

10. (Currently Amended) The PIN diode in accordance with claim 8, comprising:

a trench in a section of the device substratewafer, which abuts on the intermediate area, wherein the trench extends from a surface of the device substratewafer, which faces away from the substratewafer, to a surface of the device substratewafer, which is opposite to the substratewafer, and wherein the trench is filled with an insulating material.

11. (Currently Amended) The PIN diode in accordance with claim 10, wherein the trench is arranged in sections of the device substratewafer, which abut on the p-area and on the n-area.

12. (Original) The PIN diode in accordance with claim 11, wherein a shape of the intermediate area, which is determined by the trench, is essentially rectangular, wherein the p-area and the n-area are arranged on two opposite sides of the intermediate area.

13. (Canceled)

14. (Original) The PIN diode in accordance with claim 12, wherein at least either the p-area or the n-area extend along a whole width of the intermediate area.

15. (Original) The PIN diode in accordance with claim 11, wherein a shape of the intermediate area, which is determined by the trench is essentially trapezoidal, wherein the p-

area extends along one of the parallel sides of the intermediate area, and wherein the n-area extends along the other of the parallel sides of the intermediate area.

16. (Original) The PIN diode in accordance with claim 11, wherein a shape of the intermediate area, which is determined by the trench, is essentially circular, wherein either the p-area or the n-area is arranged in the shape of a circle along the edge of the intermediate area, wherein the n-area or the p-area, respectively, is essentially arranged in the center of the intermediate area and wherein the second electrically conductive member or the first electrically conductive member, respectively, is arranged in its center.

17. (Currently Amended) The PIN diode in accordance with claim 8, further comprising:
a further insulating layer, which covers surfaces of the p-area, the n-area, and the intermediate area, which face away from the substratewafer.

18. (Currently Amended) The PIN diode in accordance with claim 8, wherein a first pad is conductively connected to the p-area and a second pad is conductively connected to the n-area, wherein the two pads are arranged at the surfaces of the p-area and the n-area, which face away from the first surface of the substratewafer.

19. (Original) The PIN diode in accordance with claim 8, wherein the distance between the p-area and the n-area is more than 30 μm .